EXHIBIT A

Software agent for placing bids on multiple related items in an Internet Auction.

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Software agent for placing bids on multiple related items in an Internet Auction				Office Use Only
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Suresh Kumar	[redacted]	[redacted]	Software	

- [redacted]

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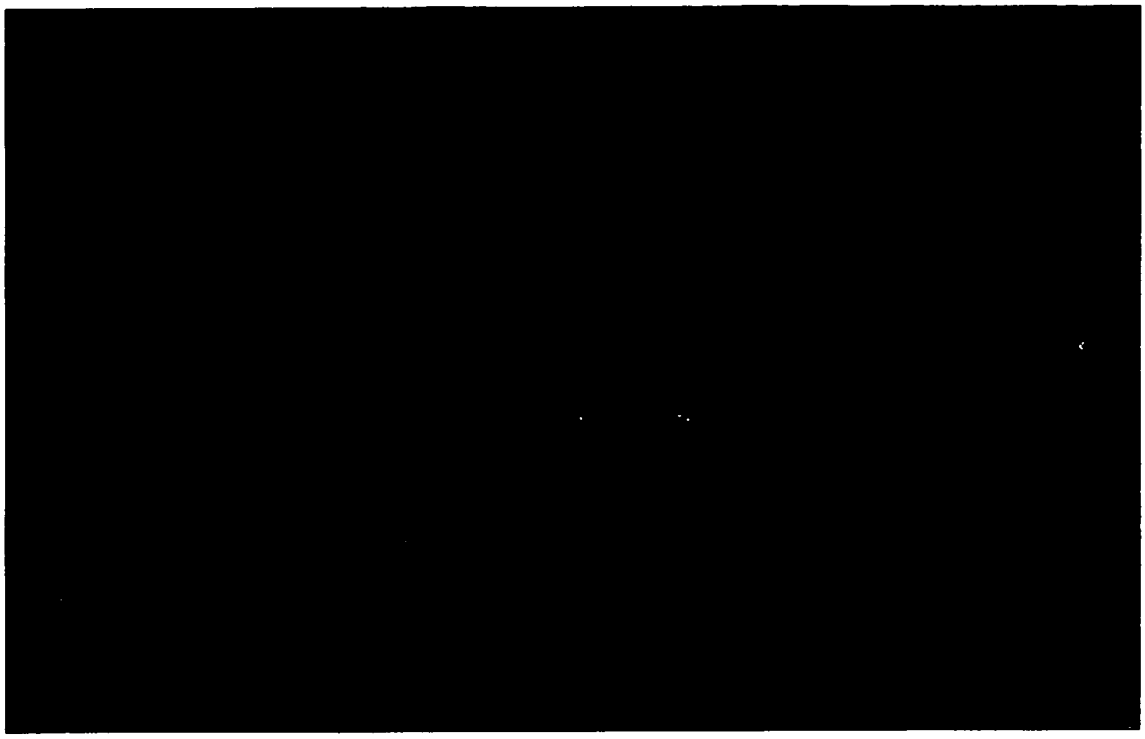


Detailed Description of Invention

This invention extends the BidClick type of automatic bidding agent to span multiple auctions. The software agent acts on behalf of the user and allows the user to participate in several auctions simultaneously, while ensuring that his bids in the different auctions are related. The invention consists of

- a software system to track the progress of multiple auctions
- an interface to allow the user to specify the set of auctions that the user wants to be related and tracked
- an interface to allow the user to specify a set of rules that define how the items are to be related
- a software system to place a bid on behalf of the user in any of these auctions based on the rules specified by the user

This is shown conceptually in Figure 3.

The software agent bids on sets of related auctions to ensure

- that the user wins in at most m out of *n* auctions in a set with either
    - minimizing the winning bid amounts, or
    - winning m among *n* items in a preferred order (trying to win#2 first and then #1,

but winning at most one)

- that the user has a chance of winning in one or more auctions from a set **only if** he wins in one or more auctions in another set
- or some combination of the above.

As a simple example, the user can instruct the agent to participate in five different auctions (say of five different bicycles), but drop out from the other two if he is successful in any three (the user wants to own at most three bikes). As another example, the agent can be instructed to bid such that the user will win item A only if he wins item ***B***. The logic involved in placing bids **on** two auctions such that the user will win in only one, and with the minimum bid is shown in Figure **4.** As yet another example, the agent can be instructed to bid among four items *a,b,c,d* such that it will win ***d*** only if it wins one from *a,b,c*, and that it will win at most one from *a,b,c*, with the preference of winning *b* if possible over a and ***c***. The logic involved in placing bids **on** two auctions such that the user will win in at most one and with a preference of winning one auction over another is shown in Figure 5. [redacted]

To generalize, the software agent takes the set of items, highest price list and the relations and places bids on the set on behalf of the user. The agent can support the user intentions by following two algorithims to decide when to place a bid and on what item to place it:

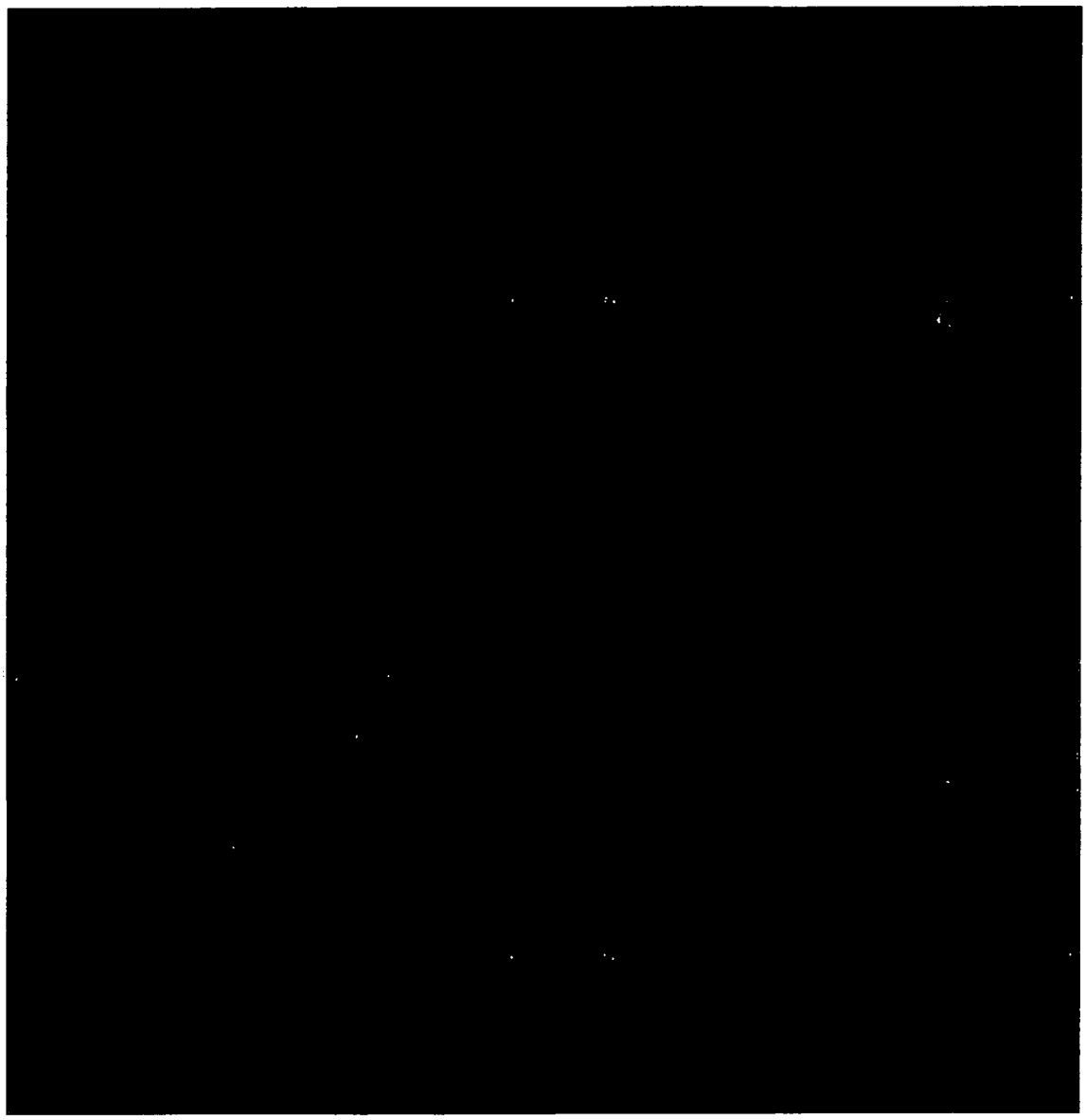
- Entering the bidding process on an item depends not only on the item in question and the current bid, but also on all the other items in the set and their bid status.

  The system starts the bid on an item if and only if all the preconditions for participating in that auction are satisfied. The preconditions are based on the status **of** all the other items in the set and the rules that the customer has applied. For example, if the user has indicated "prefer to get A or **B** or C in that order", then the system will not start bidding on B until it drops out of A, and will not start bid on C until it drops out **of** A and B.

- A bidding process on an item can be terminated not only based on the current bid on the item and the maximum price set by the user for that item, but also by bid status on other items in the set.

  If the system wins an item, it will terminate bidding on all items in the set that are affected by the win. If we follow the previous example, if the system drops out of **A** and therefore starts to bid on B, and then wins **B;** the system will immediately stop bidding on C.

[redacted]



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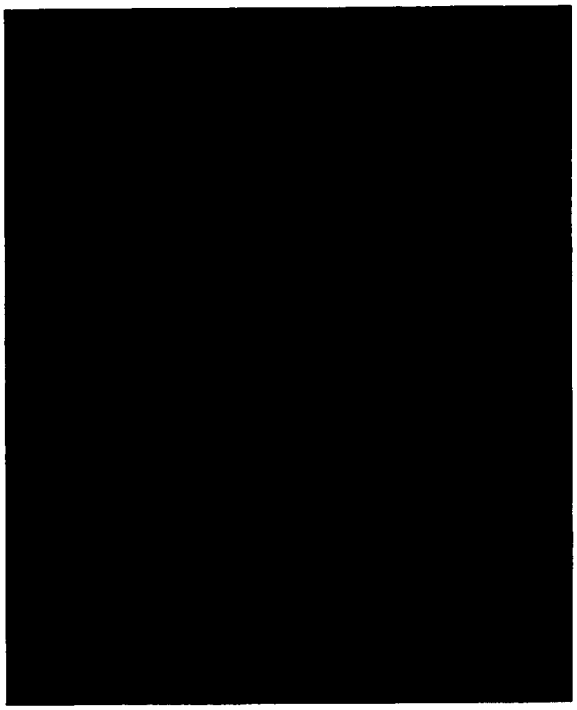

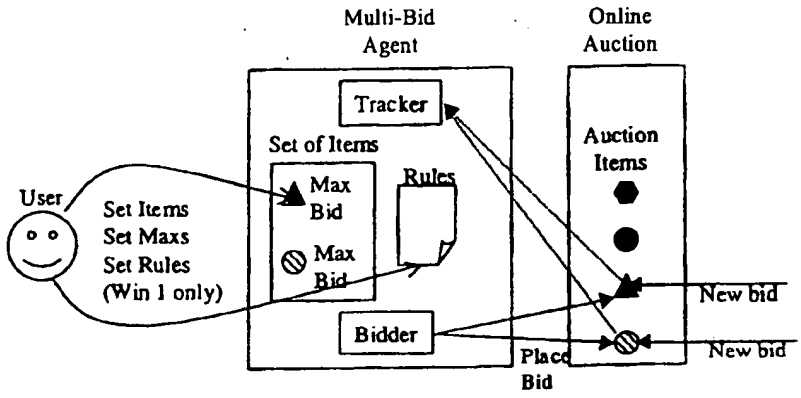

Figure 3. Multiple Items Bidding Agent

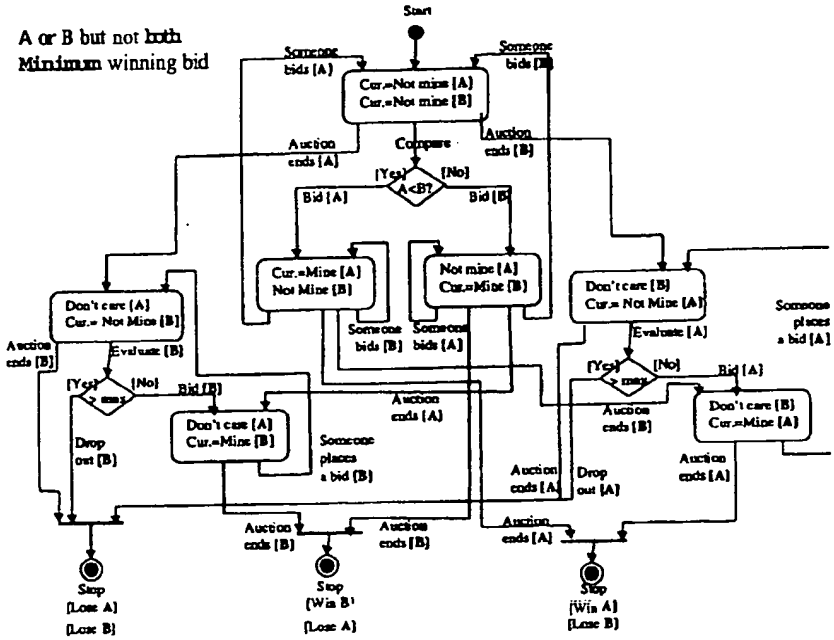

Figure 4.Logic for bidding on two items, winning at most one while minimize bid amount

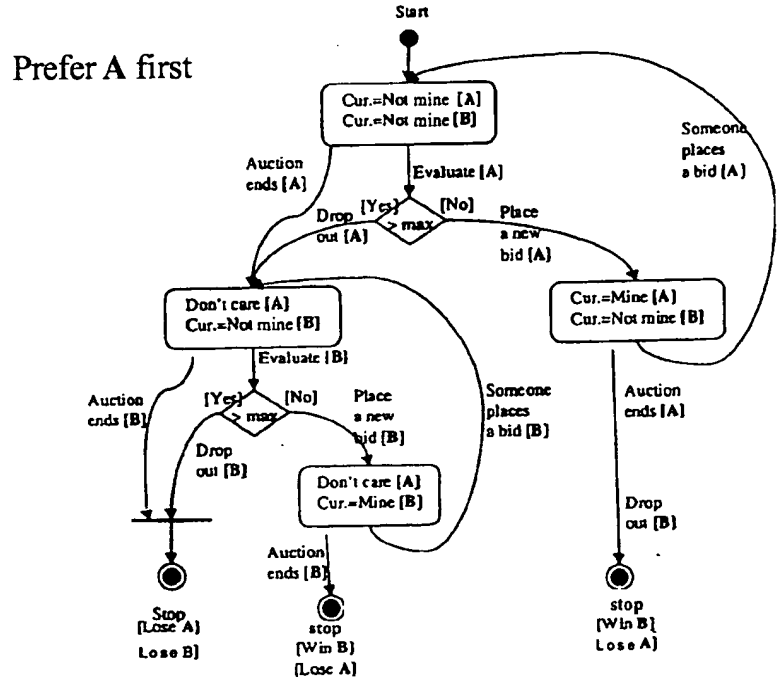

Figure 5. Logic for bidding on two items, trying to win one in preference over another